OPEN CHOLECYSTECTOMY WITH AND WITHOUT DRAINAGE
Yasir Mehmood

ABSTRACT

OBJECTIVES: To compare the risk of post operative subhepatic collection and duration of hospital stay with and without drain after elective open cholecystectomy.

DESIGN: Comparative study.

PATIENTS AND METHODS: This prospective comparative study was conducted in Surgical Unit-II of Benazir Bhutto Hospital, Rawalpindi over a period of 18 months from Jun 2007 to Dec 2008. Adult patients undergoing elective open cholecystectomy were included after fulfilling inclusion and exclusion criteria. 60 patients were divided in two groups of 30 patients each. Non-probability convenience sampling was used and patients were included in two groups on alternate basis. In group A, subhepatic drain was placed after cholecystectomy and in group B, no drain was placed. Main outcome measures were to compare the risk of post-operative subhepatic collection and post-operative duration of hospital stay.

RESULTS: Post-operative sub-hepatic collection occurred in two (6.6%) patients of group A and in two (6.6%) patients of group B. Mean duration of post operative hospital stay was 3.40 days in group A and 2.27 days in group B.

CONCLUSION: There is no statistically significant difference in post operative sub hepatic collection and post operative hospital stay in cholecystectomy with and without drain. Placing of drainage as routine after elective cholecystectomy has no advantage, therefore it should be avoided.

KEY WORDS: Cholecystectomy, Drain, Hospital-Stay.

INTRODUCTION

Gallstone disease is a major health problem and its prevalence is about 10% of the general population of Europe and United States. Although most patients with gallstones are asymptomatic and require no treatment but treatment of choice for symptomatic gallstones remains cholecystectomy. Cholelithias is the commonest indication for abdominal surgery and cholecystectomy is the second most common intra-abdominal operation performed in western countries. Although laparoscopic cholecystectomy introduced in 1987 is now accepted as a gold standard treatment for symptomatic gallstones but open cholecystectomy is still being practiced with reasonable and acceptable outcome in developing countries and also in difficult and complicated cases.

In 1913, 31 years after Langenbuch performed the first cholecystectomy, Spivak introduced the technique of undrained ideal cholecystectomy. Since then many investigators have advocated omission of drainage after cholecystectomy. These reports describe a lower incidence of postoperative morbidity, decreased hospital stay, easier convalescence and less discomfort.

The major reason for drainage of the subhepatic space after cholecystectomy is the fear of bile leakage leading to biliary peritonitis or Waltmann Walter’s syndrome, especially when gall bladder is severely inflamed or gangrenous. However many cases have been reported where surgical drain failed to prevent bile peritonitis or pericholecystic abscess. Most surgeons currently continue to drain the gall bladder bed. This practice is based on tradition rather than any scientific supportive data.

The current study is planned to evaluate the effect of subhepatic drain on subhepatic collection and postoperative hospital stay in patients with and without drain after elective open cholecystectomy.

PATIENTS AND METHODS

This prospective study was conducted in Surgical Unit-II of Benazir Bhutto Hospital, Rawalpindi over a period of 18 months from Jun 2007 to Dec 2008. Adult patients undergoing elective open cholecystectomy were included. Empyema, malignancy of gall bladder and patients undergoing choledochotomy were excluded. Sixty patients were divided in two groups of 30 patients each. There was no preference for cholecystectomy with and without drain and both techniques were used alternatively. Patients were operated under general anaesthesia by same group of surgeons. Intravenous Ceftriaxone (1gm) as prophylactic antibiotic was given at the time of
induction and continued postoperatively 12 hours for 24 hours. Subcostal Kockers or transverse incision was used according to surgeon's preference. Vicryl 2/0 was used for cystic duct and artery ligation. Drain no 18 was placed in subhepatic space in all cases of group A whereas no drain was placed in all cases of group B. Wound was closed by vicryl 1 and skin with subcuticular prolene 2/0. All patients were assessed for subhepatic collection by abdominal ultrasonography on 2nd and 10th postoperative day. Duration of hospital stay was noted. Data was entered and analyzed using Statistical Package for Social Sciences (SPSS software version 10). Descriptive statistics i.e. means with standard deviations were calculated for continuous variables like patient’s age, duration of hospital stay. Frequencies along with percentages were computed for presence or absence of post-operative subhepatic collection. Risk ratios were calculated along with their 95% Confidence Interval for risk of post-operative subhepatic collection in both the study groups. T-test was applied for comparison of means of duration of hospital stay between group A and group B. P value was calculated and a value of less than 0.05 was considered as statistically significant.

RESULTS

There were total of 60 Patients who were included in the study. They were divided in 2 groups, each containing 30 patients. Out of these 60 patients, 15 (25%) were males and 45(75%) were females. (Fig. I) Patients were between the ages of 16-74 years with mean age of 34.30 and standard deviation of ±14.622. Highest number of patients were between the ages of 25-35 years. Lowest figure was between the ages of 55-74 years. (Fig. II) Subhepatic collection was seen in 4 (6.6 %) patients out of total 60 patients who underwent elective open cholecystectomy. Out of 30 patients in Group A, who underwent cholecystectomy with subhepatic drain, subhepatic collection was seen in 2 patients (6.6 %). Out of 30 patients in group B, who underwent cholecystectomy without subhepatic drain, subhepatic collection was seen in 2 patient (6.6 %). (Fig. III) Mean of duration of post- operative hospital stay was 3.40 days (S.D ± 0.72) in group A patients who underwent cholecystectomy with subhepatic drain and 2.27 days (S.D ± 0.87) in group B who underwent cholecystectomy without subhepatic drain. (Table I)
TABLE I: Mean of duration of postoperative hospital stay in two groups of patients

<table>
<thead>
<tr>
<th>Group of Patients</th>
<th>Mean</th>
<th>N</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group A</td>
<td>3.40</td>
<td>30</td>
<td>.72</td>
</tr>
<tr>
<td>Group B</td>
<td>2.27</td>
<td>30</td>
<td>.58</td>
</tr>
<tr>
<td>Total</td>
<td>2.83</td>
<td>60</td>
<td>.87</td>
</tr>
</tbody>
</table>

DISCUSSION

Drainage of body cavities has been practiced in medicine for a long time. Historical reports of drainage of chest empyema and ascites go back to the Hippocratic era. During the last 2 centuries, surgeons also used drains for prophylactic purposes. Drains have been employed to remove intraperitoneal collections such as ascites, blood, bile, chyle, and pancreatic or intestinal juice. Gallstone disease is a frequent medical problem. Gallstones affects 10% of the population and 30% of patients with gallstones will undergo surgery. Cholecystectomy with or without drain has been the standard operation for gall bladder disease for the last 100 years. It implies removal of gall bladder and is performed mainly for symptomatic gall stones. During the last two decades, the general principles of gallstone management have not notably changed. However, methods of treatment have been dramatically altered. Today, laparoscopic cholecystectomy, laparoscopic common bile duct exploration, and endoscopic retrograde management of common bile duct (CBD) stones play important roles in the treatment of gallstones. Drainage in open cholecystectomy is a matter of considerable debate. Surgeons use drains primarily to prevent subhepatic abscess or bile peritonitis from an undrained bile leak. However recent reports have shown there is no benefit of drainage after elective cholecystectomy. Critics of drain condemn drain use, as surgically placed drains have been associated with increased rates of intraabdominal and wound infections, increased abdominal pain, decreased pulmonary functions and prolonged hospital stay. In 1913, 31 years after Langenbuch performed the first cholecystectomy, Spivak introduced the technique of un-drained ideal cholecystectomy. Since then many investigators have advocated omission of drainage after cholecystectomy. These reports describe a lower incidence of postoperative morbidity, decreased hospital stay, easier convalescence and less discomfort. Most surgeons routinely place drain at sub-hepatic space after open cholecystectomy which is not scientifically proved. Mostly drains are advocated in empyema and gangrene of gall bladder, CBD exploration, incomplete haemostasis, anticipated biliary leak, abscess formation, and difficult cholecystectomy. The major reason for drained cholecystectomy is the fear of bile leakage leading to sub hepatic collection/abscess, peritonitis, intra-abdominal haemorrhage and Watmann Walter’s Syndrome. Many cases have been reported where surgical drains failed to prevent these complications. The belief that surgical drains serve as an early warning of bile leakage, impending bile peritonitis, or intra-abdominal haemorrhage is also disputed. Many cases have been reported where bile peritonitis has occurred weeks after open cholecystectomies with drainage. Hence truly stated by Frederick Coller ‘bile is not educated to climb drains’. In our study, post-operative subhepatic fluid collection occurred in 2 patients of group A, and in 2 patient of group B. Mean of duration of post operative hospital stay was 3.40 days in group A and 2.27 days in group B. Our study favors cholecystectomy without drain as there is no statistically significant difference in terms of post-operative subhepatic fluid collection and duration of post operative hospital stay between drained and un-drained groups. A study was conducted by Ghafoor and his colleagues at Liaqat University of Medical & Health Sciences, Jamshoro. 100 patients were operated for cholelithiasis and they were randomly divided in group A and B. Number 18 Nasogastric tube was inserted in subhepatic space after cholecystectomy in Group A, and no drain tube was placed in group B patients. Mortality rate in both groups was zero. Group A had two cases of infected collection in subhepatic space and five cases of wound infection. In group B one patient with bile collection, one infected collection and two cases had wound infection. Mean hospital stay was 3.7 in group A, as compared to 2.26 in group B. They concluded that routine drainage after cholecystectomy is unnecessary as both groups were statistically insignificant with respect to complications. Zaydfudim and colleagues described the use of drains after open cholecystectomy was associated with complicated patient presentations: post operative bile spillage and high post operative blood loss. These patients had longer and more complicated post-operative course and more re admissions. However use of drain was not associated with an improvement in the rates of bile leaks, infections or death. Ashraf and colleagues conducted a study on 75 patients.
patients who were studied ultrasonographically for post cholecystectomy fluid collection.\textsuperscript{22} Drain was not used in 47 (62.6 percent) patient where gall bladder bed was dry, no spillage of gall bladder content occurred, and where there were no excessive adhesions. In 28 patients who did not fulfil this criteria a passive closed tube drain was put. Ultrasoundography was done after 24 hours in each patient to find out the collection of fluid. Out of 75 patients, 41 (54.6 percent) had minimal or no collection of fluid (without drain 59.5 percent and with drain 46.4 percent). 33 (44 percent) patients had less than 10ml collection (without drain 40.4 percent and with drain 53.5 percent). Only one patient of drained group had 14ml collection (3.5 percent). From this study they concluded that drain should not be used routinely and at the same time it should not be withheld if the surgeon feels it necessary.

Ali and his colleagues conducted a 4 years prospective analysis of open cholecystectomy performed without drainage on 212 Patients at University of Medical and Health Sciences, Jamshoro, Pakistan\textsuperscript{23} The most common complication observed includes seroma (5.66%), followed by surgical site infection both superficial and deep (3.30%) and bile leakage (1.14%). However biliary peritonitis, sub hepatic abscess and Wattman Walter’s syndrome were not observed in any case. Mean operating time was 35 minutes. Mean hospital stay was 1.5 days with no mortality during the period of hospitalisation. The overall complications rate and hospital stay was significantly less when compared to open cholecystectomy with intra-peritoneal drain. He concluded from this study that in selected cases with a dry gall bladder bed, routine use of intra peritoneal drainage is unnecessary.

Gurusamy and Samraj conducted a randomised clinical trials in Royal Free Hospital, Surgery, London comparing ‘no drain’ versus ‘drain’ in patients who had undergone uncomplicated open cholecystectomy.\textsuperscript{24} Randomised clinical trials comparing one drain with another were also included. Twenty eight trials involving 3659 patients were included. There were 20 comparisons of ‘no drain’ versus ‘drain’ and 12 comparisons of one drain with another. There was no statistically significant difference in mortality, bile peritonitis, total abdominal collections, abdominal collections requiring different treatments, or infected abdominal collections. ‘No drain’ group had statistically significant lower wound infection and statistically significant lower chest infection than drain group. They found no significant differences between different types of drains. From this they concluded that drains increase the harms to the patient without providing any additional benefit for patients undergoing open cholecystectomy and should be avoided in open cholecystectomy.

Our study, like the other national\textsuperscript{22,23,24} studies of Syed Asad Ali, Gurusamy and Abdul Ghafoor favors that drainage of simple cholecystectomy is unnecessary.

**CONCLUSION**

There is no statistically significant difference in post operative sub hepatic collection and post operative hospital stay in cholecystectomy with and without drain. Placing of drain as routine after elective cholecystectomy has no advantage, therefore it should be avoided.

**RECOMMENDATIONS**

Simple elective cholecystectomy is safe without peritoneal drainage. Drain should not be used routinely and at the same time it should not be withheld if the surgeon feels it necessary.

**REFERENCE**


